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07002109
           E.I. No: EIP94121503184
Title: Catalytic antibodies. The generation of novel biocatalysts
Author: Blackburn, G. Michael; Wentworth, Paul
Corporate Source: Univ of Sheffield, Sheffield, Engl
Source: Chemistry and Industry (London) n 9 May 2 1994. p 338-342
Publication Year: 1994
                 ISSN: 0009-3068
CODEN: CHINAG
Language: English
Author: Blackburn, G. Michael; Wentworth, Paul
Abstract: ...acids. Two methods have been used for the direct introduction of
catalytic groups into the antibody combining site: chemical modification and
site-specific mutagenesis, 42.
Descriptors: *Biocatalysts; Antibodies; Synthesis (chemical); Antigen-antibody
reactions; Immunology; Amino acids; Monoclonal antibodies; Annial cell culture; Chemical modification; Genetic engineering Identifiers: Catalytic antibodies; Haptenic groups; Transition state analogs; Amino acid residues; Electrostatic complementarity; Charged haptens; Antibody
modification: Site-specific mutagenesis: Polyclonal antibodies: Abzymes
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0003031994
                   IP Accession No: 7340292
Antibody-catalyzed anaerobic destruction of methamphetamine
Xu, Yang; Hixon, Mark S; Yamamoto, Noboru; McAllister, Laura A; Wentworth, Anita D;
Wentworth, Paul Jr; Janda, Kim D Departments of Chemistry and Immunology, The Skaggs
Institute for Chemical Biology, and The Worm Institute for Research and Medicine, The Scripps Research Institute, 10550 North Torrey Pines Road, La Jolla, CA 92037 Proceedings of the National Academy of Sciences, USA, V 104, n 10, p 3681-3686, March 6, 2007
Publication Date: 2007
Publisher: National Academy of Sciences, 2101 Constitution Ave. Washington DC 20418
USA
Document Type: Journal Article
Record Type: Abstract
Language: English
Summary Language: English ISSN: 0027-8424
Electronic Issn: 1091-6490
File Segment: Immunology Abstracts
Antibody-catalyzed anaerobic destruction of methamphetamine
Xu, Yang; Hixon, Mark S; Yamamoto, Noboru; McAllister, Laura A; Wentworth, Anita D;
Wentworth, Paul Jr; Janda, Kim D
Abstract:
...being sought for its treatment. Herein, we report the generation and characterization of a monoclonal antibody, YXI-40HIO, that catalyzes the photooxidation of (+)-2 into the nonpsychoactive compound benzal dehyde (14) under anaerobic conditions in the presence of riboflavin (6). Studies have revealed that
the antibody facilitates the conversion of (+)-2 into 14 by binding the triplet
photoexcited state of 6 in proximity to (+)-2. The antibody binds riboflavin (K
sub(d) = 180 mu M), although this was not programmed into hapten...
 4/3,K/3 (Item 2 from file: 24) Links
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0002977770
                   IP Accession No: 6749248
Cofactor-containing antibodies: Crystal structure of the original vellow antibody
Zhu, Xueyong; Wentworth, Paul Jr; Kyle, Robert A; Lerner, Richard A; Wilson, Ian A
Departments of Molecular Biology and Chemistry, and The Skaggs Institute for
Chemical Biology, The Scripps Résearch Institute, 10550 North Torrey Pines Road, La
Jolla, CA 92037
Proceedings of the National Academy of Sciences, USA , v 103 , n 10 , p 3581-3585 , March 7,\ 2006
Publication Date: 2006
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Document Type: Journal Article Record Type: Abstract Language: English Summary Language: English TSSN: 0027-8424

Electronic Issn: 1091-6490

USA

File Segment: Immunology Abstracts

Publisher: National Academy of Sciences, 2101 Constitution Ave. Washington DC 20418

Cofactor-containing antibodies: Crystal structure of the original yellow antibody Zhu, Xueyong; Wentworth, Paul Jr; Kyle, Robert A; Lerner, Richard A; Wilson, Ian A

### Abstract:

...further link between riboflavin and antibodies was discovered 30 years ago when a bright-yellow antibody, IgG super(GAR), was purified from a patient with multiple myeloma who had turned yellow....the course of her disease. It was subsequently shown that the yellow color of this antibody was due to riboflavin binding. However, it was not known how and where riboflavin was bound to this antibody. We now report the crystal structure of this historically important IgG super(GAR) is compared with another riboflavin-binding. The ligand specificity of IgG super(GAR) is compared with another riboflavin-binding antibody, IgG super(DOT), which was purified from a second patient with multiple myeloma. The crystal.

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0001469758 PAccession No: 3714013
Patients with chronic hepatitis C have circulating cytotoxic T cells which recognize hepatitis C virus-encoded peptides binding to HLA-A2.1 molecules

Battegay, M; Fikes, J; Di Bisceglie, AM; Wentworth, PA; Sette, A; Celis, E; Ching, w-M; Grakoui, A; Akatsuka, T\*; et al. Lab. Hepatitis Res., Div. Virol., CBER, FDA, Bethesda, MD 20892, USA
Journal of Virology, v 69, n 4, p 2462-2470, 1995
Addl. Source Info: Journal of Virology [J. VIROL.], vol. 69, no. 4, pp. 2462-2470,

1995 Publication Date: 1995

Document Type: Journal Article Record Type: Abstract Language: English

Summary Language: English ISSN: 0022-538X

File Segment: Virology & AIDS Abstracts; Immunology Abstracts Bate Segment: Virology & Fikes, J; Di Bisceglie, AM; Wentworth, PA; Sette, A; Celis, E; Ching, W-M; Grākoui, A; Akatsuka, T\*; et al.

#### Abstract:

...whereas two patients who had recovered from HCV infection had almost no CTL responses. Monoclonal antibody blocking experiments performed for two epitopes demonstrated a class I- and HLA-A2-restricted CTL...

4/3,K/5 (Item 1 from file: 98) Links General Sci Abs

(c) 2008 The Hw Wilson Co. All rights reserved. 5820764 H.w. Wilson Record Number: BGSA06117496

Cofactor-containing antibodies: Crystal structure of the original vellow antibody

Zhu, Xueyong

Wentworth, Paul Jr; Kyle, Robert A
Proceedings of the National Academy of Sciences of the United States of America v.
103 nol0 (March 7 2006) p. 3581-5
DOCUMENT Type: Feature Article
Special Features: Bibliographic Footnote Illustration Table ISSN: 0027-8424

Language: English

Country Of Publication: United States
Cofactor-containing antibodies: Crystal structure of the original yellow antibody
Wentworth. Paul Jr...

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Zhu, Xueyong
Wentworth, Paul,Jr; Wentworth, Anita D
Proceedings of the National Academy of Sciences of the United States of America v.
101 no8 (Feb. 24 2004) p. 2247-52
Special Features: bibl fil tab ISSN: 0027-8424
Language: English
Country Of Publication: United States
Probing the antibody-catalyzed water-oxidation pathway at atomic resolution.
Wentworth, Paul,Jr; Wentworth, Anita D

Abstract: ...trioxygen species. Nine different crystal structures were determined to
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Probing the antibody-catalyzed water-oxidation pathway at atomic resolution.

Abstract: ...trioxygen species. Nine different crystal structures were determined to elucidate the chemical consequences to the antibody molecule itself of exposure to such reactive intermediates and to provide insights into the location on the antibody where these species could be generated. Herein, we report structural evidence for modifications of two specific antibody residues within the interfacial region of the variable and constant domains of different murine antibody antigen-binding fragments (Fabs) by reactive species generated during the antibody—catalyzed water oxidation process. Crystal structure analyses of murine Fabs 40d9—and 13G5 after UV....interfacial region of the constant and variable domains and highlight the general resistance of the antibody molecule to oxidation by reactive oxygen species generated during the water-oxidation process. Reprinted by...

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General Sci Abs
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(52 2008 The HW Wilson Record Number: BGSA03209309
Evidence for the production of trioxygen species during antibody -catalyzed chemical modification of antigens.

Wentworth, Paul, Jr
Wentworth, Anita D; Zhu, Xueyong
Proceedings of the National Academy of Sciences of the United States of America v.
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100 nod (Feb. 18 2003) p. 1490-3 Special Features; bibl f graph il ISSN: 0027-8424 Language: English Country Of Publication: United States Evidence for the production of trioxygen species during antibody -catalyzed chemical

Evidence for the production of trioxygen species during antibody -catalyzed chemica modification of antigens. wentworth, Paul,Jr

Abstract: The generation of highly reactive intermediates via the antibody -catalyzed water-oxidation process was investigated. The antibody -catalyzed water-oxidation process was found to be capable of regioselectively converting antibody-bound benzoic acid into para-hydroxy benzoic acid and of regioselectively hydroxylating the 4-position of the phenyl ring of a single tryptophan residue located in the antibody molecule. The occurrence of these highly selective chemical reactions indicates the formation of a short-lived hydroxylating radical species within the antibody molecule. Given that a previously presented hypothesis holds that the singlet oxygen-induced antibody -catalyzed water oxidation pathway proceeds via the formation of dihydrogen trioxide (M203), these findings indicate...

Descriptors: Antigen-antibody complexes; Water...

4/3,K/6 (Item 2 from file: 98) Links

4/3.K/7 (Item 3 from file: 98) Links

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H.w. Wilson Record Number: BGSA04212643

General Sci Abs

05462643

absingletoxygen.txt 4/3,K/8 (Item 4 from file: 98) Links General Sci Abs (c) 2008 The HW Wilson Co. All rights reserved. H.w. Wilson Record Number: BGSA03201526 05201526 Evidence for Antibody-Catalyzed Ozone Formation in Bacterial Killing and Inflammation. Wentworth, Paul. Ir McDunn, Jónathan E; Wentworth, Anita D Science ( Science ) v. 298 (Dec. 13 2002) p. 2195-9 Document Type: Feature Article Special Features: bibl f graph il ISSN: 0036-8075 Language: English Country Of Publication: United States Evidence for Antibody-Catalyzed Ozone Formation in Bacterial Killing and Inflammation. Wentworth, Paul, Jr Abstract: ...process can lead to efficient killing of bacteria, regardless of the antigen specificity of the antibody. H2O2 production by antibodies alone was found

notigen specificient for bacterial killing. Our studies augustees alone was found to be not sufficient for bacterial killing. Our studies suggested that the antibody-catalyzed water-oxidation pathway produced an additional molecular species with a chemical signature similar to...

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04864741 H.w. Wilson Record Number: BGSA02114741
Antibody design by man and nature.

Wentworth, Paul, Jr
Science ( Science) v. 296 no5576 (June 21 2002) p. 2247-9
Special Features: bibl f diag flow chart ISSN: 0036-8075
Language: English
Country Of Publication: United States
Antibody design by man and nature.
Wentworth, Paul, Jr

4/3.K/9 (Item 5 from file: 98) Links

Wentworth, Paul, Jr; Harwig, Curtis W

General Sci Abs

Abstract: ...immunized with a stable analogue of the transition state for a given reaction, and the antibody-generating cells are harvested and immortalized using hybridoma technology; in the latter method, a DNA....members of the protein library on its surface, and this approach is used to generate antibody Fab or scFV libraries. Antibodies have proven to be peerless designer catalysts because of their...

4/3, K/10 (Item 6 from file: 98) Links General Sci Abs (c) 2008 The Hw Wilson Co. All rights reserved. 04852582 H.w. Wilson Record Number: BGSA0Z102582 A cofactor approach to copper-dependent catalytic antibodies.

Nicholas, Kenneth M
Wentworth, Paul, Jr; Harwig, Curtis W
Proceedings of the National Academy of Sciences of the United States of America v.
99 no5 (War. 5 2002) p. 2648-53
Special Features: bibl f graph il tab
Language: English
Country of Publication: United States

Abstract: ...involves incorporating a metal-binding bis-imidazole cofactor into the Page 6

combining site of the aldolase antibody 38C2. This antibody has a large hydrophobic-combining site pocket with a highly nucleophilic, covalently modifiable lvsine residue...

4/3,K/11 (Item 7 from file: 98) Links General Sci Abs (c) 2008 The HW Wilson Co. All rights reserved. H.w. Wilson Record Number: BGSA01173503 04673503 Antibody catalysis of the oxidation of water. Wentworth, Paul, Jr Jones, Lyn H; Wentworth, Anita D Jones, Cyn H; Wentworth, Anita D Science ( Science ) v. 293 no5536 (Sept. 7 2001) p. 1806-11 Special Features; bibl f graph il ISSN: 0036-8075

Language: English
Country Of Publication: United States Antibody catalysis of the oxidation of water. Wentworth, Paul, Jr

Abstract: ...X-ray crystallographic studies with xenon point to putative conserved oxygen binding sites within the antibody fold where this chemistry could be initiated. Our findings suggest a protective function of immunoglobulins...

4/3,K/12 (Item 8 from file: 98) Links General Sci Abs (c) 2008 The HW Wilson Co. All rights reserved. 04508219 H.w. Wilson Record Number: BGSA01008219

Conversion of enediynes into quinones by antibody catalysis and in aqueous buffers: implications for an alternative enediyne therapeutic mechanism.

Jones, Lyn H Harwig, Curtis W; Wentworth, Paul Journal of the American Chemical Society ( J Am Chem Soc ) v. 123 no15 (Apr. 18 2001) p. 3607-8 Special Features: bibl il ISSN: 0002-7863 Language: English Country Of Publication: United States Conversion of enediynes into quinones by antibody catalysis and in aqueous buffers: implications for an alternative enediyne therapeutic mechanism.

Harwig, Curtis W; Wentworth, Paul Abstract: A unique conversion of enedignes into quinones was discovered, and a new

Anstract: A unique conversion of eneutymes into quintings mass discovers, and antibody catalyst was evolved. The conversion occurrs in aerated aqueous solution and is not only of....may be of relevance to the therapeutic mechanism of naturally occurring enediyne antibiotics. The new antibody catalyst catalyzes the conversion of a stable cyclic enediyne substrate via a dlyl intermediate into the relevant quinone product. The findings push back the boundary of antibody-catalyzed reactions and the reactive intermediates that they are known to handle and opens up...

4/3.K/13 (Item 9 from file: 98) Links General Sci Abs (c) 2008 The HW Wilson Co. All rights reserved. H.w. Wilson Record Number: BGSA00134016 Antibodies have the intrinsic capacity to destroy antigens.

Wentworth, Anita D

Jones, Lyn H; Wentworth, Paul, Jr Jones, Lyn n, Weltworth, Paul, J1 Proceedings of the National Academy of Sciences of the United States of America v. 97 no20 (Sept. 26 2000) p. 10930-5 Special Features: bibl il ISSN: 0027-8424

Page 7

Language: English Country Of Publication: United States Jones, Lvn H: Wentworth, Paul.Jr

Abstract: A previously unrecognized chemical potential intrinsic to the antibody molecule in the immune system was investigated. For killing, the antibody molecule activates additional systems that respond to antibody-antigen union. All antibodies examined, irrespective of source or antigenic specificity, could convert molecular oxvaen...

4/3,K/14 (Item 10 from file: 98) Links General Sci Abs (c) 2008 The HW Wilson Co. All rights reserved. 04362883 H.w. Wilson Record Number: BGSA00112883 Antibody-catalysis of a bimolecular asymmetric 1,3-dipolar cycloaddition reaction.

Toker, Jonathan D Wentworth, Paul, Jr; Hu, Yunfeng Journal of the American Chemical Society ( J Am Chem Soc ) v. 122 no13 (Apr. 5 2000) p. 3244-5

Special Features: bibl il ISSN: 0002-7863 Language: English
Country Of Publication: United States

Antibody-catalysis of a bimolecular asymmetric 1,3-dipolar cycloaddition reaction. Wentworth, Paul, Jr; Hu, Yunfeng

Abstract: An antibody-catalyzed 1,3-dipolar cycloaddition reaction between N.N-dimethylacrylamide and a benzonitrile N-oxide produced 5-acylisoxazoline. representing the first example of an antibody -catalyzed bimolecular [3 + 2] pericyclic process, is reported. The findings reaffirm the aptitude with which antibody catalysts are able to simultaneously control reactive intermediates and stereo- and regiochemical reaction outcomes.

4/3,K/15 (Item 11 from file: 98) Links General Sci Abs

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A bait and switch hapten strategy generates catalytic antibodies for phosphodiester hydrolysis.

Wentworth, Paul, Jr Liu, Yungi; Wentworth, Anita D Proceedings of the Mational Academy of Sciences of the United States of America (
Proc Natl Acad Sci U S A ) v. 95 no11 (May 26 '98) p. 5971-5
Special Features; bib 11 ISSN: 0027-8424 Language: English Country Of Publication: United States

Wentworth, Paul.Jr

Abstract: ...revealed the powerful utility of a bait and switch hapten paradigm for the generation of antibody catalysis. By producing antibodies to a quaternary ammonium hapten, it proved possible to elicit the most catalytically proficient antibody, MATT.F-1, for phosphodiester hydrolysis yet reported. It may now prove possible to design...

4/3.K/16 (Item 12 from file: 98) Links General Sci Abs (c) 2008 The HW Wilson Co. All rights reserved. H.w. Wilson Record Number: BGSI97011206 03511206 Antibody catalysis of BAc2 aryl carbamate ester hydrolysis: a highly disfavored Page 8

chemical process. Wentworth, Paul,Jr

Wentworth, Paul

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Datta, Anita; Smith, Simon
Journál of the American Chemical Society ( J Am Chem Soc ) v. 119 (Mar. 5 '97) p.
2315-16
Document Type: Feature Article
Special Features: bibl il ISSN: 0002-7863
Language: English
Country Of Publication: United States
Antibody catalysis of BAc2 aryl carbamate ester hydrolysis: a highly disfavored chemical process.
Wentworth, Paul, Jr
Abstract: An antibody that catalyzes the hydrolysis of aryl carbamate esters via a
BAc2 mechanism is reported. Conventional...
4/3,K/17 (Item 13 from file: 98) Links
General Sci Abs
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03257050 ''H.W. Wilson Record Number: BGS196007050
Togard antibody-directed "abzyme" producing therapy, ADAPT: carbamate prodrug
activation by a catalytic antibody and its in vitro application to human tumor cell
killing.
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Datta, Anita; Blakey, David Proceedings of the National Academy of Sciences of the United States of America ( Proc Natl Acad Sci U S A ) v. 93 (Jan. 23 '96) p. 799-803 Document Type: Feature Article Special Features; bib il 1 ISSN: 0027-8424

Language: English Country Of Publication: United States

Toward antibody-directed "abzyme" producing therapy, ADAPT: carbamate prodrug activation by a catalytic antibody and its in vitro application to human tumor cell killing.
Wentworth, Paul

Abstract: The possibility that humanized catalytic antibodies ("abzymes") could replace the bacterial enzyme component of antibody-directed enzyme prodrug therapy (ADEPT) in an improved targeted therapy was explored. ADEPT aims to....systems is reduced by the immunogenicity of their bacterial enzyme component. The study identified an antibody that can effectively hydrolyze a carbamate prodrug and thus influence cytotoxicity in vitro. In vitro.....viability of cultured human colonic carcinoma cells. The new system has been named ADAPT for antibody-directed abzyme prodrug therapy.

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5 AU=LERNER, RICHARD M
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